

Catalyst Precious Metals Analysis

version 2014-10-20

Engine Family FHALX 123A4V
 VIN/Serial No. L97AEJLD2FZ004672
 Task Directive TD2, Opt 2
 Entry Number ES3-2090853-7
 Inspection Number 20150701-0945-02

Instrument Used X-5000 (S/N 202212)
 Calibration Curve Name Metallic Curve 2015-01-16

Catalyst Inspection Date 7/2/2015

Certificate Catalyst Manufacturer Zhongxi Exhaust Gas Purifier Co., Ltd.

Certificate Catalyst Part Number ZLATV-019B 4.01

Observed Catalyst Markings NONE

Catalyst Type (Honeycomb or mesh) Honeycomb

Measured Metal Ratios

	Measured Value (% concentration, by weight)	Measured Value (ppm)	Calculated Ratio from Measurement
Pt	0.021	209	4.4
Pd	0.268	2,679	55.8
Rh	0.005	48	1.0
Ce	9.530	95,300	
Zr	0.835	8,354	

Certified Metal Ratios

	Reported Cert Loading Value	Reported Cert Loading Value Units	Calculated Loading Value (g/L)	Calculated Cert Ratio	Reported Cert Ratio
Pt		g/m ³	0.0000	NA	
Pd		g/m ³	1.4126	NA	
Rh		g/m ³	0.0000	NA	
Total		g/m ³	1.4126		

Value to compare against measured: Reported Cert Ratio

Ratio Percent Difference (%)

Pt	
Pd	
Rh	

Loading Determination

Sample Extraction Method Drilled holes
 Weight of Extracted Powder (g) 1.09

Manually Extracted Volume (for loadings)

Hole #	Drill Bit Diameter (Inches)	Hole Length/Depth (mm)	Hole Volume (mm ³)	Hole Volume (L)
Hole 1	17/64	59.64	2.132	0.002132
Hole 2	17/64	59.64	2.132	0.002132
Hole 3			0	0.000000
Total Volume of Extraction Holes:			0.004265	

Loading

	Extracted Washcoat Powder Weight (g)	Calculated Metals Loading (g/L)	Cert Value - Loading (g/L)	Loadings Percent Difference (%)
Pt	0.00023	0.053		
Pd	0.00292	0.685		
Rh	0.00005	0.012		
Total	0.00320	0.75041		

Test Conditions 3 runs, 90 seconds each

Check Standards The measured concentrations of all precious metals for all pre- and post-inspection check standards were within their maximum allowable ranges.

The calculated ratio was Pt : Pd : Rh was 4.4 : 55.8 : 1 and the reported certified ratio was

Result Comments The calculated loading for Pd was than the certified value.
 The calculated total loading was than the certified value.

Related Photo(s) DSCN0825.JPG - DSCN0826.JPG

Inspector(s) Asim Rawoof

Report Date 7/2/2015

Daily Calibration Results (Pre-Inspection)

Check Standard #1 ID	Measured Value (ppm)	NEIC Value (ppm)	Maximum Percent Difference (%)	Percent Difference	Call Status	Comments
Pt 00026	9,576	9,410	11.87%	1.8%	OKAY	
Pd 01335	113	144	47.30%	21.5%	OKAY	
Rh 1146-1	613	697	13.23%	12.1%	OKAY	

Daily Calibration Results (Post Inspection)

Check Standard # ID	Measured Value (ppm)	NEIC Value (ppm)	Maximum Percent Difference (%)	Percent Difference	Call Status	Comments
Pt 00026	9,775	9,410	11.87%	3.9%	OKAY	
Pd 01335	108	144	47.30%	25.0%	OKAY	
Rh 1146-1	624	697	13.23%	10.5%	OKAY	

Catalyst Measurement

version 2014-09-123

Color Coding Legend

Data Entry Cell	Calculated Cell	Acceptable Percent Difference Calculation	Percent Difference Calculation	Instrument Calibration Out of Range
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Daily Calibration Results

End Rod Result	Accuracy (mm)
25 mm End Rod	24.98
50 mm End Rod	50.01
75 mm End Rod	74.99

Engine Family FHALX.123A4V
 VIN/Serial No. L97AEJLD2FZ004672
 Task Directive TD2, Opt 2
 Entry Number ES3-2090853-7
 Inspection Number 20150701-0945-01
 Catalyst Inspection Date 7/1/2015
 Certificate Catalyst Manufacturer Zhongzi Exhaust Gas Purifier Co., Ltd.
 Certificate Catalyst Part Number ZLATV-019B.4.01
 Observed Catalyst Markings NONE

Instrument Used Starrett calipers (SN: 04231713)
 Date of Last Simco Calibration 5/6/2015

	1st Measured Value (mm)	2nd Measured Value (mm)	3rd Measured Value (mm)	4th Measured Value (mm)	Calculated Average Value (mm)	Percent Difference	Certificate Values
Diameter: outside of exhaust piping	35.12	35.14	35.07	35.13	35.12		
Diameter: outside of catalyst casing	Not measured	Not measured	Not measured	Not measured	--	--	See comments
Diameter: inside of catalyst casing (catalyst diameter)	32.44	32.57	32.44	32.46	32.48	--	See comments
Length: exhaust piping	70.63	70.59	70.87	70.67	70.69		
Length: catalyst casing	Not measured	Not measured	Not measured	Not measured	--	--	See comments
Length: catalyst material	Not measured directly	Not measured directly	Not measured directly	Not measured directly	59.64	--	See comments
Inset: catalyst casing (side 1)	Not measured	Not measured	Not measured	Not measured	--		
Inset: catalyst casing (side 2)	Not measured	Not measured	Not measured	Not measured	--		
Inset: catalyst substrate (side 1)	2.25	2.36	2.35	2.30	2.32		
Inset: catalyst substrate (side 2)	8.72	8.70	8.74	8.77	8.73		
Counted cells (total)	128				49.41	--	Not reported
Avgas inside diameter of casing (in)	1.28				99.68		
PAIR Observed? (Y/N)	Y						
PAIR Photo Name	DSCN0795.JPG						

Estimated Surface Area of Honeycomb Catalyst

Units	Calk from Measured Values	Calk from Cert Values	Percent Difference
sq. mm	79,676	--	--
sq. in	123.5	--	--

	Calk from Measured Values	Calk from Cert Values
Area of Honeycomb Face (sq. mm)	828	
Area of One Cell (sq. mm)	6.47	
Radius of Semi-Circle	2.03	
cells/mm ²		

Comments The cert. app reports dimensions on [REDACTED] but does not clearly state whether it is for the catalyst casing or substrate.

Areas of Concern All measured values are within [REDACTED] of the certified dimensions.

Photo Used for Counts DSCN8022 - Cell Count.JPG

Inspector: Aasim Rawoot
 Report Date: 7/2/2015